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REVIEWS AND MISCELLANY.

NOTES ON VITAL STATISTICS.

Defects in British Census-taking.

A short paper by Dr. J. R. Kaye on the "Certification and Registration of Death," in *Public Health* for October, 1901, criticises the British system of collecting mortality statistics in the following respects. The Registration Act of 1874, which is still in force, requires a certificate of death from all medical men in attendance upon deceased persons and from coroners in all cases of sudden, violent and suspicious deaths. Although this act greatly improved the conditions which obtained under the system of voluntary medical certification in operation since 1837, it left unaccounted for a certain proportion of deaths which occur without medical care or coroner's inquest. The ratio of these uncertified deaths is decreasing steadily, having fallen from 4.1 per cent in 1881 to 1.85 per cent in 1899; but the error is still unfortunate. The second flaw in the registration system is the lack of medical certificates of still births, the certificate of any midwife being accepted for the burial of still-born children. The third source of error in the mortality statistics arises from the imperfect returns of the causes of deaths by medical men and, still more, by coroners. The use of such vague terms as catarrh, senile decay, asphyxia, etc., the reporting of several causes for a single death, without indicating their relative importance, and the deliberate suppression of such causes as alcoholism and syphilis, are mentioned in particular. Dr. Kaye quotes the recent verdict of a coroner in Leeds, which was "death from strangulation, but no evidence to show the child had ever lived." He urges the medical certification of deaths, including still-births, on a compulsory form of certificate, and the investigation by a public official of all deaths not so certified.

A companion paper to that just reviewed is a criticism of the British census system entitled "The Case for Census Reform," published by G. H. Ryan in the *Journal of the Institute of Actuaries* for January, 1902. The author quotes extensively from the Report of

the Census Committee appointed by the Government in 1890, as well as from other sources, and comments on existing conditions with some severity. His first point is the need for a quinquennial census in order to furnish data for sanitary and financial calculations in the smaller registration districts, where changes in the rate of increase make deductions from the ten-year census untrustworthy. He points out that the more progressive nations, France, Germany, Sweden, and some of the Australian colonies have already adopted the more frequent census. Mr. Ryan's next argument, for a permanent census office, sounds somewhat familiar to Americans at this time; but it is pleasant to find that the generous equipment of the American census bureau and the employment of expert assistance of high character are quoted as examples for the British government. In connection with the presentation of the data collected the omission of the returns of the population at integral years of age (quinquennial totals only being given from 5 years to 25 years, and decennial totals from 25 to 85), is justly criticised. Finally the author strongly urges the examination of the Hollerith Electrical Tabulating Machine used in Russia and the United States, in connection with recent censuses. Anyone interested in this machine will find an interesting account of its work in a paper on "Mechanical Tabulation of the Statistics of Agriculture in the Twelfth Census of the United States," read by H. T. Newcomb before the American Association for the Advancement of Science at Denver in August, 1901, and since published in pamphlet form.

The Canadian Census.

The *Economic Journal* for December, 1901, contains a review of the recent Canadian census by Professor John Davidson, of the University of New Brunswick. The author notes the widespread popular disappointment over the reduced rate of increase during the last decade (nine per cent, against eleven per cent in the previous decade). He believes, however, that the exodus to the United States which has held the Dominion population down has already begun to be balanced by an influx of Americans to take up Canadian lands. An analysis of the figures shows that while Prince Edward Island has actually lost in population, and Nova Scotia, New Brunswick and Ontario have increased but slightly, British Columbia has nearly doubled,

and the Northwest Territories have more than doubled their totals. Besides the gross population, the number of families and the number of dwellings in the various districts have been already published. The number of persons to a family shows a slight decrease, from 5.2 to 5.1, for the whole Dominion; the 1901 value in the eight provinces ranges from 4.5 in Ontario to 5.5 in Prince Edward Island.

The Law of Averages in Criminology.

In *L'Economiste Français* for October 26, 1901, is an interesting summary of the report of the Keeper of Seals on the crimes and misdemeanors in the French Republic during the year 1899. Crimes against the person occurred in the same number as in 1898; but crimes against property showed a marked augmentation, due to an increase of thirteen per cent in grand larceny and an increase of twenty per cent in incendiarism. The classification of the criminals according to sex, age, and civil and social condition gives results almost identical with those of the preceding year, and exhibits in a very striking manner the constancy of the sociological laws controlling crime.

Classes of accused persons.	Percentage of all accused persons.		Classes of accused persons.	Percentage of all accused persons.	
	1899	1898		1899	1898
Sex :			Birth :		
Males	86	83	French	93	94
Females	14	17	Foreign	7	6
Age :			Domicile :		
Under 21 years . . .	19	18	Rural	36	37
21-40	55	56	Urban	49	49
41-60	21	22	None	15	14
Over 60 years . . .	5	4	Literacy :		
Civil Condition :			Completely illiterate . .	15	13
Single	60	59	Able to read and write . .	82	83
Married	34	35	Having superior education	3	4
Widowed	6	6			

The misdemeanors show a marked falling off in arrests for vagabondage and mendicancy, due to a ministerial circular of May 2, 1899, urging leniency toward offenders of this class, and a decrease in simple theft, with an increase in assault and battery.

Mental Pathology and Alcoholism.

A paper on *Idiot and Imbecile Children*, published by Dr. Louise G. Robinovitch in the *Journal of Mental Pathology*, for July, 1901, p. 86, contains a table of statistics with regard to 100 idiotic and imbecile children admitted to the Ste. Anne Asylum, Paris. In the families of these 100 children, 155 other children had been born, of whom 53 had died and 7 miscarried, while 95 were living at home, of whom 72 only were in good health. In the 100 families, both parents were "alcoholic" in one case, the mother was "alcoholic" in one case and the father in 52 cases. The author concludes that "Alcoholism of the parents not only causes idiocy and imbecility of the offspring, but also acts as a strong factor in reducing the birth rate and increasing the death rate." This may be true, but it requires other proof than the statistics quoted. In the first place, the term "alcoholic" is indefinite; according to some definitions, fifty per cent of non-idiotic children of the poorer classes might show 54 per cent of "alcoholic" parents. In the second place, alcoholism is associated with poverty and poverty with poor food, bad air, etc., so that any relation which exists may be an indirect one. Finally, according to biological theories of heredity, the alcoholism of the parent may not cause the idiocy of the child, but both may be the results of defect in the original germ plasm from which both child and parent are derived.

A paper by Dr. J. Morel in the *Journal of Mental Pathology* for September, 1901, contains some similar statistics on the contributory causes of pauperism and crime under the caption, "On the Prophylaxis and Treatment of the Recidivist Criminal." It seems reasonable to suppose that the laws of criminology can best be studied in the class of persons mentioned, as the character of the occasional criminal should be intensified in the habitual offender. Dr. Morel gives the statistics of 158 recidivists sentenced for ten or more years; of this number, 55 had "alcoholic" parents, 37 had members of their family serving sentences, 30 had no education, and 52 had only rudimentary education. Again, the lack of comparative figures for the non-criminal population of the same social rank and the vague nature of the basal information (except in the case of relatives under sentence), make any conclusions hazardous.

Vital Statistics of France for 1900.

An official report on the movement of population in France during 1900 is published in the *Journal de la Société de Statistique de Paris* for January, 1902. The discouraging conclusions as to decreasing population drawn from the last census are confirmed by this document. The total number of births fell in 1900 to 2.24 per 100 of the legal population, the lowest figure recorded since the beginning of the century. The most hopeful feature of the report consists in an increased marriage rate, the figure, 1.54 newly married persons per 100 population, being higher than any which has been noted since 1876.

A New Theory to Account for Decreasing Birth Rates.

M. G. Cauderlier contributes a striking and important paper on "La Loi qui règle les Naissances" to the *Journal de la Société de Statistique de Paris* for January and February. His thesis is that the birth rate, like the marriage rate, is directly controlled by economic conditions, in particular as such conditions affect emigration; and he takes issue with Bertillon, Leroy-Beaulieu and Arsène Dumont, who hold the main factor to be the complexity of civilization, and the increase of social ambition. Cauderlier first takes up the successive changes in various European countries, and shows that, while in general the natality rate rose from 1840 to 1875 and fell from 1875 to 1895, the fecundity rate was much more constant. In England and Belgium it remained stationary; in France it fell from 1867 to 1872, in consequence of the antagonism with Prussia and the war of 1870, and again from 1884 to 1889 in consequence of the invasion of the phylloxera and financial crises; in Wurtemberg it fell from 1864 to 1870, thanks to three wars and the heavy expenses connected with the formation of the German Empire; in Holland it remained constant from 1857 to 1878, and then rose till 1885, corresponding with an enormous increase in foreign trade; in Prussia it remained constant from 1859 to 1883, and then rose with the rapid development of industry and commerce. The author concludes, therefore, that the fecundity is constant for the same region, except for economic changes. M. Cauderlier then considers the geographical difference in the birth rate in various parts of Europe. The maximum is found in the most

fertile and industrial regions of Russia, and the ratio of births decreases in proportion as one passes from this center.

Assuming the normal fecundity to be a constant, the author explains a decreased natality in various regions, such as Belgium, England and France, by a combination of the five following factors,—a decrease in the number of marriages, an improvement in sanitation, tending to increase the proportion of the population below marriageable age, an increase in the mean age of marriage, an increased centralization of population in cities, where “the natural coefficients of fecundity” are diminished, and poor economic conditions directly decreasing fecundity. The next section of M. Cauderlier’s paper deals with the periodic variations in fecundity in the various departments of France, and shows a marked relation between this value and economic conditions. Most striking, however, is his tabulation of the illegitimate fecundity (ratio of illegitimate children to single women), a quantity which would naturally be freer from the effect of increased restraint during periods of financial depression than any of the rates ordinarily used. In spite of this fact the relation to economic conditions is marked, as shown by the following table:—

Period.	Conditions.	Number of Departments with Illegitimate Fecundity Rate		
		Increasing by over 5 per 10,000	Stationary.	Decreasing by over 5 per 10,000
1852-56 to 1857-61 . .	Prosperity .	44	22	15
1857-61 to 1862-66 . .	Prosperity .	37	24	20
1862-66 to 1867-71 . .	Panic . . .	21	20	43
1867-71 to 1872-76 . .	Prosperity .	32	29	23
1872-76 to 1877-81 . .	Panic . . .	15	23	46
1877-81 to 1882-86 . .	Slow recovery	41	19	24
1882-86 to 1887-91 . .	Panic . . .	19	24	41
1887-91 to 1892-96 . .	Slow r covery	42	26	16

Having thus shown that the restraint of parents is insufficient to account for all the facts, the author studies the various departments in detail in order to find some other cause. He shows that they may be divided into five groups—those in which the fecundity has not varied since 1857; those in which the fecundity showed a fall

due to the war of 1870-71, but was constant before that period, and has been constant at a lower level since; those in which the economic conditions following the war proved beneficial and which show a constantly higher rate afterward than before; those in which a constant rate before the war has been replaced by a steadily falling one; and those in which the fecundity has been steadily decreasing since 1857. The last two classes of departments must furnish, of course, the key to the situation. M. Cauderlier studies in each of them the ratio of males between the ages of 15 and 20 to the number between 25 and 30, and shows that there exists a constant difference between the two age groups far too great to be accounted for by any ordinary mortality, and pointing clearly to an active emigration of young men. For example, in the extreme case of the department of Landes there were in 1891, 16,624 males of the first age group and 7357 of the second. The author believes, then, that the decreased fecundity is mainly due to the removal from the rural districts of a large proportion of young men, including the most vigorous, active and healthy individuals. This operates, not only directly by the removal of young husbands, but indirectly by a reversal of the process of natural selection, leads to a constant deterioration of the race with a corresponding fall in the rate of fecundity. The introduction of this biological factor to explain a declining birth rate is a new and significant contribution to the problem. At the same time it appears to the reviewer that the truth lies somewhere between the positions occupied by M. Arsène Dumont and M. Cauderlier,—for this reason: Emigration to the cities accounts for a decreased fecundity in rural districts, but it does not account for the decreasing population of France, as a whole. Why is not the emigration of the strongest young males from the country to the city followed by an increased urban fecundity sufficient to balance the rural decrease? Not because the purely biological conditions of city life favor a low birth rate, for the reverse is the case. As M. Cauderlier himself says, "*la faible natalité des grandes villes est due à ce que ces dernières augmentent les besoins de la vie, en fournissant les moyens d'y satisfaire.*" That is, the author is after all compelled to call in the factor of self-restraint, due to the complex needs of civilization, to account for the larger features of the problem. Nevertheless, this paper, like all M. Cau-

derlier's work, is admirably thorough and scientific, and his recognition of biological laws is most important. No one has contributed more ably than this author to the progress of vital statistics during the last few years.

C.-E. A. WINSLOW.

STATISTICS OF DISEASES.

Statistics of Typhoid Epidemics.

Dr. Schüder, of Koch's laboratory at Berlin, attempts a statistical estimate of the relative importance of various vehicles of typhoid infection in a paper, "Zur Aetiologie des Typhus," in the *Zeitschrift für Hygiene und Infektionskrankheiten*, vol. xxxviii, p. 343. He has collected reports of epidemics of various size, and by including 12 single cases where personal contagion was excluded, brings up his total to 650. Of these, 377 were in Germany, 140 in England, 66 in France, and 25 in America. Tabulating the epidemics by assigned causes, it appears that 70.8 per cent were supposed to be due to water supply, 17.0 per cent to milk supply, and 3.5 per cent to other foods. The value of such a massing of incongruous statistics in which large and small epidemics are given equal weight, may fairly be doubted. It is also quite impossible to apply laws derived from the study of epidemics to the distribution of a disease as a whole. Besides sharp epidemic outbreaks arising from the transmission of infection to a large number of people at the same time by the same medium, typhoid fever is propagated more insidiously, in a fashion for which the reviewer has elsewhere suggested the term "proso-demic," passing from person to person by different routes of infection. Obviously water supply furnishes an exceptional opportunity for the first mode of infection, and will be of much less importance in the second.

Diphtheria Statistics.

Some valuable diphtheria statistics, "Diphtherie-statistik des Stadtkrankenhauses zu Dresden 1849-1898," are published by Dr. F. Förster as a *Sonderabdruck aus der Festschrift zum fünfzigjährigen Bestehen des Stadtkrankenhauses zu Dresden*. The table of monthly